UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/649,499	08/28/2000	William F Jones	26242.00	8209

22465	7590	12/28/2004

PITTS AND BRITTIAN P C
P O BOX 51295
KNOXVILLE, TN 37950-1295

EXAMINER
LU, TOM Y

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/649,499	JONES, WILLIAM F
	Examiner	Art Unit
	Tom Y Lu	2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10 August 2004</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,9 and 11-15* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3,6,11,12,14 and 15* is/are allowed.

6)☒ Claim(s) *1,4 and 13* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 1-04)   **Office Action Summary**   Part of Paper No./Mail Date 20041022

DETAILED ACTION

Response to Amendment

1.   The written response filed on August 10, 2004 has been considered.

2.   Claims 2, 5, 7, 8 and 10 are cancelled.

3.   Claims 14-15 are newly added.

4.   Claims 1, 3, 4, 6, 9, 11, 12, 13, 14 and 15 are pending.

Response to Arguments

5.   Applicant's arguments, see remarks, pages 14-16, filed on August 10, 2004, with respect

to the rejection(s)of claim(s) 1 and 4 under 35 U.S.C. 103 (a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration,

a new ground(s) of rejection is made in view of Jones (U.S. Patent No. 5,224,037).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 1, 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones

et al (U.S. Patent No. 5,224,037).

        a.   Referring to Claim 1, Jones discloses a first digital pipeline latch (see figure 7, Ls

on the left are the claimed "first digital pipeline latch") for receiving said data (sinogram

consisting of LORs, *t* and *u*, column 4, line 42) collected by said positron emission

tomograph device (column 4, line 17); a plurality of multipliers disposed in a parallel,

each of said plurality of multipliers for receiving an multiplying a portion of said data to generate a product simultaneous with each other of said plurality of multipliers (see figure 7); a second digital pipeline latch for simultaneously receiving said product from each of said plurality of multipliers (see figure 7); a plurality of adders, each of said plurality of adders for receiving and summing a plurality of said product from said plurality of multipliers (see figure 7); Jones does not explicitly disclose the plurality of adders can be disposed in parallel. However, it would have been an obvious matter of design choice to modify the Jones' reference by connecting the adders in parallel because the equation $P = C + t_f(D - C) + u_f(A - C) + t_f u_f(B + C - A - D)$ can be modified to $P = [C + t_f(D - C)] + [u_f(A - C) + t_f u_f(B + C - A - D)]$, which allows two adders to be connected in parallel. In addition, applicant has not disclosed that having the plurality of adders connected in parallel solves any stated problem or is for any particular purpose and it appears that adders connected in series can perform equally well. In addition, Jones teaches a third digital pipeline latch must be required for receiving data from said plurality of adders (a third digital pipeline latch must be required to carry the sum of two adders in parallel to output point P), said data being representative of a pair of transformed coordinate points from a primary coordinate system to a secondary coordinate system (the primary coordinate is 3-D coordinate to secondary coordinate, 2-D coordinate; a pair of points are (t_i, u_i) and (t_j, u_j)); whereby as said data is input to said first digital pipeline latch, said product of said data from an immediately previous said event is input to said second digital pipeline latch and completely transformed data from a second immediately previous said data is input to said third digital pipeline latch, and

whereby said event data is transformed from said primary coordinate system to said secondary coordinate system in real time (see figure 7, the input data is processed without memory delay, in real time).

b.   With regard to Claim 4, all limitations are addressed in Claim 1.

c.   With regard to Claim 13, the only difference between Claim 4 and Claim 13 is Claim 13 calls for additional step of "normalizing said data", which Jones discloses that at column 4, line 33.

Allowable Subject Matter

7.   Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8.   Claims 3, 6, 11-12 and 14-15 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

  a. Claim 9 defines a feature step of histogramming the data after the step of normalizing said data and before the step of multiplying selected groups of the data in the plurality of multipliers. This feature step is not explicitly taught or suggested by the art of record.

  b. Independent Claims 11 and 12 both define equations used to produce transformed coordinates from the primary coordinate system to the secondary coordinate system. These equations in combination with other features in Claims 11 and 12, which are the broadest allowable claims, are not taught or suggested by the art of record.

  c. Claim 3 is dependent upon Claim 11.

  d. Claim 6 is dependent upon Claim 12.

e. Claim 14 defines normalizing steps in detail, which comprises sub-steps of inputting event data into a first normalizing pipeline latch to provide a transaxial geometric correction value for said even; providing a geometric correction value for said event; inputting said geometric correction value and information regarding said event to a second normalizing pipeline latch; providing a dead time correction value for said event; and performing an integer multiply of said geometric correction value and said dead time correction value. These sub-steps in combination with other steps in Claim 14 are not taught or suggested by the art of record.

f. Claim 15 defines histogramming step in detail, which includes sub-steps of reading from a memory a current bin value indexed by a bin address; applying the bin value produced by the memory together with a normalization value for said current bin to an adder; and writing an output of the adder to the current bin. These sub-steps are in combination with other steps in Claim 15 are not taught or suggested by the art of record.
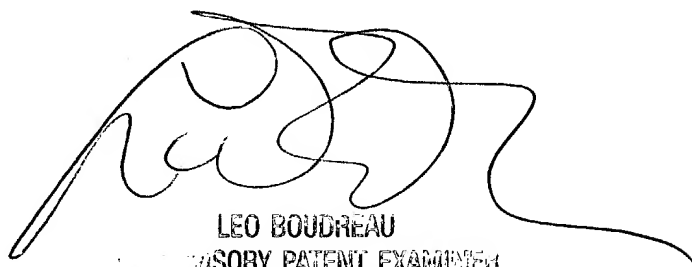
Conclusion

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Y Lu whose telephone number is (703) 306-4057. The examiner can normally be reached on 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Y. Lu

LEO BOUDREAU
...SORY PATENT EXAMINER
...NOLOGY CENTER 2600